

NPIC/TSSG/RED-063/70

16 MAR 1970

MEMORANDUM FOR: Director, National Photographic Interpretation Center

SUBJECT : Proposed Contract with the [REDACTED]

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1. This memorandum requests approval for the commitment of funds for the renewal of a contract. The specific request is contained in paragraph 7.

2. Modern reconnaissance systems are highly sophisticated, providing extremely complex imagery with regard to both geometry and structure. As a result, the optical devices required to extract information from this imagery have undergone a corresponding increase in sophistication. As a consequence, highly specialized expert assistance is needed to help the Research and Engineering Division evaluate proposals, evaluate breadboards, check computer calculated lens designs and systems design specifications. In the past, RED has had [REDACTED] under contract to provide this type of assistance. He has been consulted extensively on equipment such as the High Precision Stereo Comparator, the Wide-Field, High-Power Anamorphic Stereoviewer and the Automatic Stereo Scanner. [REDACTED] has now become unavailable to us and will be replaced in this advisory capacity by [REDACTED] an expert in lens design and optical systems evaluation. The same type of expertise, but in the area of physical optics and coherent lens systems, will be supplied by [REDACTED]

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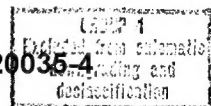
3. a. The proposed R&D effort would provide scientific assistance in four main areas:

- (1) Continuation--along with some expansion--of the type of advisory consultation provided by [REDACTED] would be the primary contributor and would review lens designs submitted by contractors, evaluate breadboard experiments and prototypes, provide advice on optical testing and procedures.
- (2) Technical backup in the area of physical optics---this area would primarily be handled by [REDACTED] Support would be provided, primarily to the Advanced Technology Branch, on laser applications, holography, optical system diagnosis, and proposal evaluations.

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- (3) There are certain types of optical experimentation, checking out of computer lens designs, ray tracing, and spot diagrams which can be carried out for RED by a graduate assistant under the direction of [REDACTED]

[REDACTED] Six man-months, along with some computer time necessary to carry out this function, have been budgeted for under the contract.

- (4) Lectures and seminars on computer methods in lens design, optical testing procedures, writing of specifications, and Fourier optics will be conducted at NPIC.

b. As in the past, these services would be available to all those in NPIC working in this area, i.e., RED, ESD, and APSD. The technical back-up and the consultation would be acquired on an "as required" basis to assist with specific problems on contracts and/or determining the feasibility of development objectives. The lectures and seminars would be given at [REDACTED] and scheduled and tailored to meet specific requirements of NPIC technical personnel--phototechnologists, physicists, and photochemists, etc. For example, the Lens Design and Evaluation courses given by [REDACTED] each year could be adapted to specific RED needs and given in-house. [REDACTED] work with color film evaluation in coherent optical systems, and his lectures on physical optics, would be available on a similar basis.

c. The contributions of [REDACTED] have proven extremely valuable. [REDACTED] evaluated a series of proposals on microscope evaluation, interferometer applications, and techniques for determining coherent transfer functions. [REDACTED] has participated in the program review of a microstereoscope being designed by [REDACTED] analyzed and recommended corrective action for the astigmatism problem encountered with the [REDACTED] Dual Viewing Microstereoscope; consulted on optical coating problems, and participated in the [REDACTED] Microscope Design Criteria Program review. In every case the elements of NPIC involved expressed a desire and indicated a need to maintain the availability of their services. The addition of a graduate research assistant to the program would provide essential flexibility in the laboratory analysis of theoretical questions and in the design of preliminary experiments at the Institute. All work at the University would be unclassified.

d. Written reports will be submitted for each task except for the lectures and seminars. In the latter case text material will be provided by the University.

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4. [REDACTED] was selected as the contractor because of their previous relationship in prior contracts of this type which demonstrated their ability to work with and evaluate our equipment contractors, while maintaining a neutral, professional position and because of the availability of [REDACTED]

a. [REDACTED] now retired as Director of Optics, [REDACTED] is renowned for his abilities in lens and optical system design. For the past twenty years he has taught a course in lens and optical system design at the [REDACTED]

b. [REDACTED] was selected for this effort because of his extensive theoretical knowledge in physical optics and his ability to reduce theory to practice in terms understood by workers in the field. As Director, [REDACTED] he is in the best position to supervise the other contributors to the contract.

c. The estimated cost [REDACTED] is within the funds programmed in the FY-70 R&D budget.

5. On the basis of past performance and the expanded scope of this proposal, it is anticipated that follow-on action will result in the form of a continuation of the work proposed.

6. The sterility code [REDACTED] is appropriate and the project officer will assure that no classified work is conducted at the University.

7. It is requested that the negotiation of a contract with the [REDACTED] to conduct the program described at a cost not to exceed [REDACTED] be approved.

[REDACTED]
Chief, Technical Services & Support Group,
NPIC

Attachments:

1. Proposal
2. Form 2420

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APPROVED: [REDACTED]

20 MAR 1970

ARTHUR C. LUNDAHL

Date

Director

National Photographic Interpretation Center

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